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10/550,422	09/21/2005	Peter Andrin	DC8507 US PCT	3305

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EXAMINER	
ENIN-OKUT, EDUE	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/550,422	ANDRIN ET AL.	
	Examiner	Art Unit	
	Edu E. Enin-Okut	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *25 November 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4 and 23-44* is/are pending in the application.

4a) Of the above claim(s) *5-22* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4 and 23-44* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

PROCESS FOR JOINING A GAS DIFFUSION LAYER TO A SEPARATOR PLATE

Detailed Action

1. The amendments filed on November 25, 2008 were received. Applicant has amended claims 1, 2, 4, 30, 35 and 38. Although claim 34 is denoted as "Currently Amended", it does not appear that any changes have been made to the text of that claim. Currently, claims 1-4 and 23-44 are pending.

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 112

3. Claim 35 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 35 recites the limitation "the thermoplastic polymer, partially fluorinated polymers and liquid crystal polymer". There is insufficient antecedent basis for this limitation in the claim

Claim Rejections - 35 USC § 102

4. The rejection of claims 1, 2, 36, 37, 39-42 and 44 under 35 U.S.C. 102(b) as being anticipated by Davis (GB 2 326 017 A) withdrawn because claims 1 and 2 have been amended.

5. Claims 1, 34 and 36-44 are rejected under 35 U.S.C. 102(b) as being anticipated by Davis (GB 2 326 017 A).

Regarding claim 1, Davis teaches bonding [welding] a surface of a porous electrode anode and cathode assemblies [porous bodies] to a electrically conductive, thermoplastic bipolar plate [separator plate] in a fuel cell assembly using techniques; thus, sealing the fuel and oxidant channels while

eliminating the need for additional gaskets or seals (p. 3, lines 22-30; p. 4, line 31 - p. 5, line 3). The bipolar plate (35), composed of any number or plastics (see p. 5, lines 15-20 for an exemplary list) and an electrically conductive filler, has a plurality of channels or grooves (37) [flow field channels with a plurality of landing surfaces] formed on its surface to provide for gas distribution to the anode and cathode (p. 4, line 31 - p. 5, line 28; Fig. 3; see the labeled figure below). Bonding between the above-described components can be accomplished by laminating the bipolar plate directly to the anode and cathode assemblies (MEA) by applying heat and pressure to fuse them to each other (p. 6, lines 4-28). This method of fusing serves to seal the gas distribution channels from each other; thus, providing mechanical rigidity and integrity to a fuel cell stack and sealing it in a single step (p. 6, lines 7-11).

One of ordinary skill in the art would appreciate that at least a portion of the body of a porous electrode in the fuel cell of Davis serves as a gas diffusion layer (e.g., see Davis, p. 1, lines 29-31).

Further, that artisan would also appreciate that fusing the bipolar plate to the surface of the electrode assemblies of Davis as described above is effectuated by melted portions the thermoplastic bipolar plate entering the pores along the surface of the porous electrode assemblies.

Regarding claim 34, Davis teaches that the polymer is a thermoplastic polymer selected from melt processible polymers [polycarbonates], thermoplastic elastomers [ABS], polyolefins [polypropylene], polyamides, and aromatic condensation polymers [polycarbonates] (p. 5, lines 15-19).

Regarding claim 36, Davis teaches that the conductive filler is graphite fiber or graphite powder (p. 4, line 33- p. 5, line 1).

Regarding claims 37 and 38, Davis teaches that the landing surface comprises a polymer rich outer layer of about 100 wt % or less (p. 4, line 31 - p. 5, line 3; p. 6, lines 14-20).

With respect to claims 39-44, it has been held that "[e]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-

process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP 2113.

Regarding claim 39, Davis teaches an electrochemical cell component comprising a gas diffusion layer welded to a separator plate using the process of claim 1 (Abstract).

Regarding claim 40, Davis teaches an electrochemical cell comprising a gas diffusion layer welded to a separator plate using the process of claim 1 (Abstract).

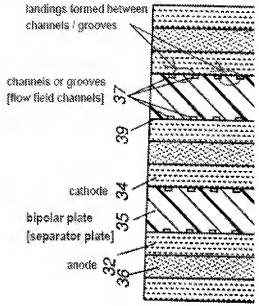
Regarding claim 41, Davis teaches an electrochemical cell comprising the electrochemical cell component of claim 39 (Abstract).

Regarding claim 42, Davis teaches an electrochemical cell stack comprising a plurality of the electrochemical cells of claim 41 (Abstract; p. 2, lines 20-21; p. 3, lines 22-23).

Regarding claim 43, although Davis does not expressly teach the properties of electrochemical cell component as recited in this claim, it is the position of the examiner that such properties are inherent, given that both Davis and the instant invention have similar structures and composition. It has been held that either anticipation or obviousness exists where applicant claims a composition in terms of a function, property or characteristic, and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference (e.g., *In re Best*, 562 F.2d 1252, 1255 n.4, 195 USPQ 430, 433 n.4 (CCPA 1977)). See MPEP 2112 (III).

Regarding claim 44, Davis teaches an electrochemical cell component of claim 39, wherein the surface of the separator plate comprises open flow field channels and the gas diffusion layer does not sink into the open flow field channels (p. 6, lines 20-21).

Labeled figure from Davis (Fig. 3):



Claim Rejections - 35 USC § 103

6. The rejections of claims 3-4, 23-29, 30-33 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis in view of Ledjeff et al. (US 5,733,678), Burke (US 4,673,450), Marianowski (US 6,261,710), Scherer (US 3,860,468) and Takagi et al. (US 7,008,991) are withdrawn because claims 4, 30 and 35 have been amended. The rejections of those claims are presented below.

7. Claims 2-4 and 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis as applied to claims 1, 34 and 36-44 above, and further in view of Ledjeff et al. (US 5,733,678), Burke (US 4,673,450) and Marianowski (US 6,261,710).

Davis is applied and incorporated herein for the reasons above.

Regarding claims 2 and 3, Davis does not expressly teach that the welding is resistance welding.

Ledjeff teaches that the thermoplastic polymer individual components of a fuel cell, such as its current collector and current distributor, are held together by a bonding process without seals like welding or gluing (Abstract; 8:39-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a welding technique to join the gas diffusion layer of Davis to its separator plate because Ledjeff teaches that it produces a component that requires either no sealing at all or very little sealing material (see Ledjeff, 5:56-60).

However, Ledjeff does not expressly teach resistance welding.

Burke teaches a method of welding together graphite fiber reinforced thermoplastic laminates that includes placing the two separate pieces to be welded together adjacent each other and applying pressure to the outer sides of the parts (Abstract; 1:50-54). A pair of electrodes is placed on the opposite outer sides of the parts to be welded (1:54-55). A spot weld or weld seam, with good lamination in the weld area, can be accomplished applying voltage in the range of 20 to 40 volts and amperage in the range of 30 to 40 amps using the electrodes for approximately 5 to 10 seconds (1:44-48, 1:55-57, 2:37-45).

Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious to use a resistance welding taught by Burke as the welding technique of Ledjeff to join the gas diffusion layer in the electrochemical cell of Davis to its separator plate because Marianowski teaches that it produces a bond that lowers contact resistance between the joined components thereby promoting better electrical conductivity (see Marianowski, 5:21-23, 6:19-24).

Regarding claim 4, Davis teaches (a) placing the landing surface in contact with the gas diffusion layer (p. 3, lines 28-30; p. 6, lines 4-7); and, (c) applying pressure to the landing surface and gas diffusion layer to allow the molten polymer to impregnate within the pores of the porous body (p. 6, lines 4-7; see the rejection of claim 1 above).

However, Davis does not expressly teach (b) applying an electrical current between the gas diffusion layer and the electroconductive separator plate to produce localized heat at the landing surface sufficient to melt the thermoplastic polymer in the landing surface and produce molten polymer; or, (d) ceasing to apply the electrical current to allow the molten polymer to cool and solidify.

Burke, discussed above, teaches applying voltage and amperage across electrodes sufficient to soften a thermoplastic material in surface contact between the electrodes; and, cooling those parts in the surface contact area to form a weld (claim 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to form a weld using resistance welding to apply the electrical current between the gas diffusion layer and separator plate of in the electrochemical cell of Davis to melt the polymer at the plate's landing surface, and to stop the current to allow the melted surfaces to cool and form a seam, because Burke teaches that a weld with good lamination in the weld area can be produced.

Regarding claims 23 and 24, Davis does not expressly teach the electrical current is the electrical current is between about 0.01 amperes/mm^2 and about 5 amperes/mm^2, its voltage is between about 1 and about 25 volts and the current is applied for a time from about 0.5 to about 100 seconds; or, the electrical current is between about 0.8 and about 1.1 amperes/mm^2.

However, Burke, discussed above, teaches forming a weld bond between thermoplastics, with good lamination in the weld area, by applying voltage in the range of 20 to 40 volts and amperage in the range of 30 to 40 amps using the electrodes for approximately 5 to 10 seconds (1:55-57, 2:37-45).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g., *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply current and voltage to the diffusion layer and separator plate of in the electrochemical cell of Davis during the welding process because Burke teaches that it sufficiently joins components together by creating good lamination in the weld area without damaging those components.

Regarding claims 25-27, Davis teaches applying heat and pressure to fuse a grooved, thermoplastic bipolar plate to adjacent, porous electrode assemblies (p. 1, lines 29-31; p. 5, lines 26-28; p. 6, lines 4-28).

Davis does not expressly teach the ranges of pressure applied as recited in these claims.

Burke teaches a method of welding together graphite fiber reinforced thermoplastic laminates that includes applying pressure to the outer sides of the parts in the range of 50 to 100 psi during the welding process (Abstract; 1:50-54, 2:24-28).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g., *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to apply pressure to the diffusion layer and separator plate of in the electrochemical cell of Davis during the welding process because Burke teaches that it sufficiently joins components together by creating good lamination in the weld area without damaging those components, as discussed above.

Regarding claim 28, Burke teaches that the electrical current is applied using external electrodes (1:54-55).

Regarding claim 29, Ledjeff, discussed above with respect to claim 3, also teaches a welding step that is frictional or high frequency welding (8:49-9:6).

8. Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Ledjeff et al., Burke and Marianowski as applied to claims 1-4 and 23-29 above, further in view of Scherer (US 3,860,468).

Davis, Ledjeff, Burke and Marianowski are applied and incorporated herein for the reasons above.

Regarding claim 30, the limitations recited in this claim have been addressed above with respect to claims 4 and 29, except (b) applying a vibrational force between the separator plate and the gas diffusion layer to produce localized heat at the landing surface sufficient to melt the thermoplastic polymer at the landing surface; and (d) ceasing to apply the vibrational force to allow the molten polymer to cool and solidify.

Scherer teaches a method of friction welding two thermoplastic parts together in predetermined alignment with each other comprising cyclically moving the parts relative to one another thereby setting up a relative vibration between the two parts, whereby opposing forces are substantially equal while pressing the two parts into surface contact with each other for a time sufficient to melt the contacting surfaces by frictionally induced heat, stopping the relative vibration with the parts in predetermined alignment, and holding the parts in predetermined alignment with said surfaces pressed into contact with each other until the melted thermoplastic resin hardens (Abstract).

Davis, Ledjeff and Scherer are analogous art because they are concerned with the welding of thermoplastic parts to join those parts together.

Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious to form a weld using vibration welding, in the manner taught Scherer, to apply the vibrational force between the gas diffusion layer and separator plate in the electrochemical cell of Davis, as modified by Ledjeff, Burke and Marianowski, to melt the polymer at the plate's landing surface, and to stop its application to allow the melted surfaces to cool and form a seam, to form a welded component because Ledjeff teaches that use of vibrational welding requires either no sealing or very littlie sealing material (see Ledjeff, 5:56-60).

Regarding claim 31, Davis, Ledjeff, Burke and Marianowski do not expressly teach that the vibrational force is applied at a frequency of between about 100 and about 500 cycles per second for a time from 3 to about 100 seconds at an amplitude of between about 0.5 and about 5 mm.

Scherer also teaches that its method for friction welding thermoplastic parts together, discussed above, includes oscillating the two parts relative to one another through a displacement of small amplitude, the vibration having a frequency of about 100 cycles/second and the vibrations being such as to produce a relative movement between the contacting surfaces of between 2 and 8 millimeters during each half cycle of vibration (claim 4).

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply a vibrational force at a frequency and amplitude as taught by Scherer to weld together the diffusion layer and separator plate in the electrochemical cell of Davis, as modified by Ledjeff, Burke and Marianowski, for the reasons discussed above with respect to claim 30.

As to applying the vibrational force for a time from 3 to about 100 seconds, one of ordinary skill in the art would find it obvious to apply the method taught by Scherer for a time sufficient to melt the contacting surfaces of the diffusion layer and separator plate in the electrochemical cell of Davis, as modified by Ledjeff, Burke and Marianowski, by frictionally induced heat to facilitate the subsequent bonding of those surfaces (see Scherer, Abstract).

Regarding claims 32 and 33, Davis teaches applying heat and pressure to fuse a grooved, thermoplastic bipolar plate to adjacent, porous electrode assemblies (p. 1, lines 29-31; p. 5, lines 26-28; p. 6, lines 4-28).

Davis, Ledjeff, Burke and Marianowski do not expressly teach the ranges of pressure applied as recited in these claims.

Scherer teaches clamping the parts together to create a pressure at the surfaces to be welded of 15 to 35 kg/cm^2 (i.e., 198 to 412 psig) (Abstract; 3:30-37).

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I).

Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g., *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Thus, one of ordinary skill in the art at the time of the invention would have found it obvious to apply a force to diffusion layer and separator plate in the electrochemical cell of Davis, as modified by Ledjeff, Burke and Marianowski, during the welding process, as taught by Scherer, to urge the mating surfaces of the parts together and promote the melting of the mating surfaces due to the friction set up between the parts (see Scherer, 3:44-47).

9. Claim 35 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davis, Ledjeff et al., Burke, Marianowski and Scherer as applied to claims 1-4 and 23-33 above, and further in view of Takagi et al. (US 7,008,991).

Davis, Ledjeff, Burke, Marianowski and Scherer are applied and incorporated herein for the reasons above.

Regarding claims 35, Davis, Ledjeff, Burke, Marianowski and Scherer do not expressly teach that the polymer is a blend of maleic anhydride modified polymer with a thermoplastic polymer, partially fluorinated polymers and liquid crystalline polymer or mixtures thereof where the amount of maleic anhydride modified polymer included in the polymer is about 5 wt % to about 25 wt %.

Takagi teaches a thermoplastic resin composition comprising two different thermoplastic resins (component A and component B), conductive carbon black (component C), and conductive carbon black having a larger specific surface area than that of component C or hollow carbon fibril (component D) (Abstract). The thermoplastic resins usable as component A are principally those classified as amorphous thermoplastic resins, such as a styrene-maleic anhydride copolymer resin, and the thermoplastic resins usable as component B are principally those designated as crystalline thermoplastic resins (2:41-47, 3:1-13, 3:31-36). The resin composition comprises the two thermoplastic resins combined in such a ratio that component A will be 5 to 65 parts by weight and component B will be 95 to 35 parts by weight in 100 parts by weight of the two thermoplastic resins combined (9:12-19).

Davis and Takagi are analogous art because they are both concerned with the composition of a thermoplastic resulting in good electrical properties and moldability.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the polymer composition of Takagi, with composition components in the percentage ranges as taught by Takagi, in the separator plate used in the electrochemical cell of Davis, as modified by Ledjeff, Burke, Marianowski and Scherer, because Takagi teaches that it produces a component with improved electroconductivity and antistatic properties with no comprises in mechanical strength (see Takagi, 2:16-20, 10:43-54).

Davis, as modified by Ledjeff, Burke, Marianowski Scherer and Takagi, does not teach the claimed percentage of the composition components. However, it has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art (e.g., *In re Wertheim*, 541

F.2d 257, 191 USPQ 90 (CCPA 1976); *In re Woodruff*, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990)). See MPEP 2144.05 (I). Further, the courts have also held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art (e.g., *In re Aller*, 105 USPQ 233). See MPEP 2144.05 (II).

Double Patenting

10. The provisional double patenting rejections of claims 39-44 as being unpatentable over claims 1-4 and 27-52 of copending Application No. 10/550,424 in view of Ledjeff et al. (US 5,733,678) and claims 1-4 and 12-24 of copending Application No. 10/550,423 are maintained. The rejections are repeated below for convenience.

11. Claims 39-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 and 12-24 of copending Application No. 10/550,423.

Although the conflicting claims are not identical, they are not patentably distinct from each other because claims 1-4 and 12-24 of the co-pending application encompass the limitations of claims 39-44 in the instant application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claims 1-4 and 23-44 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-4 and 27-52 of copending Application No. 10/550,424 in view of Ledjeff et al. (US 5,733,678).

Although the conflicting claims are not identical, they are not patentably distinct from each other because one of ordinary skill would appreciate that the process of Application No. 10/550,424 can be applied to join a diffusion layer to a separator plate.

Application No. 10/550,424 (Application No. '424) teaches welding together a first coolant plate to an adjacent, second coolant plate, both plates made of a polymer and a conductive filler, in order to seal the first plate to the adjacent plate (claim 1).

Application No. '424 does not expressly teach joining a gas diffusion layer to a separator plate.

Ledjeff teaches that the thermoplastic polymer individual components of a fuel cell, such as its current collector and current distributor, are held together by a bonding process without seals like welding or gluing (Abstract; 8:39-48).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use a welding, as taught by Application No. '424, to join the gas diffusion layer of Ledjeff (i.e., current distributor) to its separator plate (i.e., current collector) because it produces a component that requires either no sealing at all or very little sealing material (see Ledjeff, 5:56-60).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

13. Applicant's arguments filed November 25, 2008 have been fully considered but they are not persuasive.

14. As to Applicant's contention that the Davis reference does not teach gas diffusion layer (GDL) (see p. 7 of its remarks), this argument was considered but is moot in view of the new ground(s) of rejection as presented above.

15. As to Applicant's contention that the Davis reference does not teach welds spaced apart by flow field channels (see p. 7 and 8 of its remarks), Applicant is directed to the rejection of claim 1, as amended, presented above. Further, one of ordinary skill in the art would readily appreciate that heat lamination of the landing surfaces is indicative of exactly that action. To suggest that this includes lamination of the channels or grooves machined into the separator plate of Davis, those channels or grooves being used to distribute gases to the anode and cathode (see Davis, p. 5 and 6), to the surfaces of the anode or cathode is an interpretation completely unsupported by the teachings of the Davis reference.

16. As to Applicant's contention with respect to use of an adhesive layer in the Davis reference (see p. 8 of its remarks), Applicant fails to appreciate that the use of an adhesive in the Davis reference is one of several embodiments described in that reference (see Davis, p. 6) and those other embodiments include joining components without the use of an adhesive.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Correspondence / Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday-Thursday, 7 a.m. - 3 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/
Examiner, Art Unit 1795

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795